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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,719	07/28/2003	Masaki Hashimoto	1114-185	7087
23117	7590	08/24/2004	EXAMINER	
NIXON & VANDERHYE, PC 1100 N GLEBE ROAD 8TH FLOOR ARLINGTON, VA 22201-4714			DOTE, JANIS L	
			ART UNIT	PAPER NUMBER
			1756	

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/627,719

Applicant(s)

HASHIMOTO ET AL.

Examiner

Janis L. Dote

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/4/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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1. The disclosure is objected to because of the following informalities:

The use of trademarks, e.g., Panlite [sic: PANLITE] at page 45, line 18, has been noted in this application. The trademarks should be capitalized wherever they appear and be accompanied by the generic terminology. This example is not exhaustive. Applicants should review the entire specification for compliance.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Appropriate correction is required.

2. The examiner notes that the term "controlling means" recited in instant claim 2 is a means-plus-function limitation covered by 35 U.S.C. 112, sixth paragraph. No structure for said term is recited in the claims. The instant specification defines "controlling means" as a "processing circuit that can be implemented by a microcomputer in which a central processing unit (CPU) is mounted. The controlling means 28 includes, for example, Read Only Memory (ROM), and a controlling program for

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operating the controlling means 28 is previously stored in the ROM. According to the controlling program that is read from the ROM, the controlling means 28 outputs a controlling signal for controlling the rotational speed of the driving means 24 in response to the thickness of a layer that is the measurement result output from the spectrometer 27." See the instant specification at page 30, line 24, to page 31, line 9, and Fig. 5.

3. The instant specification defines the term "maximum peak-to-valley roughness (R_y)" at page 20, lines 1-14, and in (or, "with reference to") Fig. 2.

The specification defines the term "centerline average roughness (R_a)" as the average of the absolute values of derivations from the average line m to the roughness curve. See the specification, page 20, line 23, to page 21, line 10.

The specification defines the term "ten-point average roughness (R_z)" at page 21, line 11, to page 22, line 1, and in (or, "with reference to") Fig. 3.

The specification defines the term "average peak-to-peak distance that is an average of a peak-to-peak distance of a cross-sectional curve (S_m)" at page 22, lines 8-14.

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The specification defines the term "peak count Pc" at page 22, line 21, to page 23, line 12.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 3, and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite in the phrase a "photoreceptor . . . being exposed to coherent light" (emphasis added) because it is not clear whether the phrase is a statement of intended use or applicants intend for the photoreceptor to be exposed to coherent light, even when the photoreceptor is sitting on a storage shelf.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this

Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f), or (g) prior art under 35 U.S.C. 103(a).

9. In the interest of compact prosecution, the examiner has interpreted the language "being exposed to coherent light" recited in instant claim 1 as a mere statement of intended use.

Rejections based on these interpretations are set forth infra.

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10. Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Japanese Patent 02-103556 (JP'556). See the USPTO English-language translation of JP'556 for cites.

JP'556 discloses an electrophotographic photoreceptor comprising a conductive substance and a photosensitive layer on the substrate. The conductive substrate has a surface roughness having a maximum height R_{max} (i.e., R_y) of 0.8 to 1.0 μm , a R_a of 0.12 to 0.15 μm , a R_z of 0.78 to 0.98 μm , and a S_m of 9 to 11 μm . Translation, page 10, lines 9-22. The values of R_{max} , R_a , R_z , and S_m are within the ranges recited in instant claim 1.

JP'556 does not disclose that the conductive substrate has a peak count P_c of 60 to 100 as recited in instant claim 1. However, as discussed, supra, the conductive substrate has a surface roughness that meets the roughness parameters R_y , R_a , R_z , and S_m recited in instant claim 1. JP'556 also discloses that when the photoreceptor is exposed to a single wavelength light, no interference fringes were observed. JP'556 further discloses that the photoreceptor provided images without white voids and black spots. Translation, page 11, lines 3-12. The instant specification at page 23, lines 20-22, discloses that when the conductive substrate has a peak count P_c of less than 60 and the number of the peaks having large irregularities

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is small, interference fringes are generated in image formation. Thus, because the conductive substrate disclosed by JP'556 has a surface roughness that meets the surface roughness parameters R_y , R_a , R_z , and S_m , and appears to have the properties sought by applicants, it is reasonable to presume that the conductive substrate disclosed by JP'556 has a surface roughness peak count P_c that is within the range recited instant claim 1. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

The recitation "being exposed to coherent light" in instant claim 1 is a statement of intended use, which does not distinguish the photoreceptor disclosed in JP'556. The recitation of the intended use must result in a structural difference between the claimed invention and the prior art or in a process, a manipulative difference, in order to patentably distinguish the claimed invention from the prior art. See In re Casey, 152 USPQ 235 (CCPA 1967) and In re Otto, 136 USPQ 458, 459 (CCPA 1963). As discussed above, the photoreceptor disclosed by JP'556 appears to meet the compositional limitations recited in the instant claim. Thus, the intended use recited in the instant claim does not result in a difference between the photoreceptor recited in the instant claim and the photoreceptor disclosed in the cited prior art.

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 2001-027815 (JP'815) combined with JP'556. See the Japanese Patent Office (JPO) machine-assisted English language translation of JP'815 and the USPTO translation of JP'566 for cites.

JP'815 discloses a method of making an electrophotographic photoreceptor comprising the steps of: (1) sequentially coating an undercoat layer, a charge generation layer, and a charge transport layer onto a conductive substrate in a coating apparatus; (2) sequentially measuring the wet film thickness of each layer after coating by an optical interference method; (3) feeding the results from the optical interference measurement to a processing unit, which determines the wet film thickness of the coated layers, estimates a dry film thickness from the wet film thickness, from which a spreading rate for a desired thickness is determined; and (4) controlling the amount of coating coated on the substrate to adjust the thickness of layers by inputting the determined spreading rate from the processing unit to the rotation controller of the lifting device in the coating apparatus. Translation, paragraphs 0013-0017, 0021-0026, 0056-0059, 0062, 0075-0076; and JP'815, Fig. 2. The processing unit is a processing circuit that comprises a

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computer that computes the wet film thickness, the estimated dry film thickness, and the spreading rate, and controls the coating of the coated layers. Translation, paragraphs 0057-0058. Thus, the processing unit disclosed by JP'556 is within the definition of the "controlling means" recited in instant claim 2. See paragraph 2, supra. According to JP'815, the method disclosed by JP'815 controls the thicknesses of the undercoat layer, the charge generation layer, and the charge transport layer with high precision. Translation, paragraph 0075-0077.

JP'815 does not exemplify the step of preparing a conductive substrate as recited in the instant claim.

JP'556 discloses a method of making a conductive substance for an electrophotographic photoreceptor comprising the step of grinding the surface of an aluminum substrate with a particular grinding tape that is press contacted to the surface of the substrate. Translation of JP'556, page 6, lines 14-21, and page 9, line 20, to page 10, line 8. The resultant conductive substrate has a surface roughness having a maximum height R_{max} (i.e., R_y) of 0.8 to 1.0 μm , a R_a of 0.12 to 0.15 μm , a R_z of 0.78 to 0.98 μm , and a S_m of 9 to 11 μm . Translation of JP'556, page 10, lines 9-19. The values of R_{max} , R_a , R_z , and S_m are within the ranges recited in instant claim 2. According to JP'556, a photoreceptor comprising the aluminum substrate

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disclosed by JP'556 provides images with stable image density without the occurrence of any image flaws, such as scratches, white voids, and black dots, or the development of interference fringes. Translation of JP'556, page 6, lines 6-12, and page 11, lines 7-20.

JP'556 does not disclose that the conductive substrate has a peak count Pc of 60 to 100 as recited in instant claim 2. However, as discussed, supra, the conductive substrate has a surface roughness that meets the roughness parameters Ry, Ra, Rz, and Sm recited in instant claim 2. JP'556 also discloses that when a photoreceptor comprising the JP'556 aluminum substrate as the conductive substrate is exposed to a single wavelength light, no interference fringes were observed. JP'556 further discloses that the photoreceptor provided images without white voids and black spots. Translation, page 11, lines 3-12. The instant specification at page 23, lines 20-22, discloses that when the conductive substrate has a peak count Pc of less than 60 and the number of the peaks having large irregularities is small, interference fringes are generated in image formation. Thus, because the conductive substrate disclosed by JP'556 has a surface roughness that meets the surface roughness parameters Ry, Ra, Rz, and Sm, and appears to have the properties sought by applicants, it is reasonable to presume that the conductive

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substrate disclosed by JP'556 has a surface roughness peak count Pc that is within the range recited instant claim 2. The burden is on applicants to prove otherwise. Fitzgerald, supra.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of JP'556, to incorporate the step of preparing a conductive substrate as taught by JP'556, such that the resultant substrate has the roughness properties of Rmax (i.e., Ry) of 0.8 to 1.0 μm , a Ra of 0.12 to 0.15 μm , a Rz of 0.78 to 0.98 μm , and a Sm of 9 to 11 μm , in the method disclosed by JP'815, because that person would have had a reasonable expectation of successfully obtaining a method for making electrophotographic receptors that provide images with stable image density without the occurrence of any image flaws, such as scratches, white voids, and black dots, or the development of interference fringes.

12. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,239,824 B1 (Mutou) combined with JP'556. See the USPTO translation of JP'556 for cites.

Mutou discloses an image forming apparatus comprising an electrophotographic photoreceptor 10 and an exposure unit 15. Col. 4, lines 10-17, and Fig. 1. The exposure unit 15 comprises an infrared semiconductor laser 20, which emits light having a

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wavelength of 780 nm. Col. 4, lines 43-46, and Fig. 2. The exposure unit 15 can form electrostatic latent images having a resolution of 1200 dpi. Col. 5, lines 50-54, and col. 6, lines 35-38. The exposure unit 15 meets the exposure apparatus limitations recited in instant claims 3 and 4.

Mutou discloses that the photoreceptor comprises a conductive substrate, an undercoat layer, a charge generation layer, and a charge transport layer. Col. 4, lines 29-34. However, Mutou does not disclose that the conductive substrate has a surface roughness as recited in the instant claims.

JP'556 discloses an aluminum substrate having a surface roughness having a maximum height R_{max} (i.e., R_y) of 0.8 to 1.0 μm , a R_a of 0.12 to 0.15 μm , a R_z of 0.78 to 0.98 μm , and a S_m of 9 to 11 μm . According to JP'556, a photoreceptor comprising the aluminum substrate disclosed by JP'556 provides images with stable image density without the occurrence of any image flaws, such as scratches, white voids, and black dots, or the development of interference fringes. The discussion of JP'556 in paragraph 11 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of JP'556, to use the conductive substrate taught by JP'556 as the conductive

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substrate in the photoreceptor in the image forming apparatus disclosed by Mutou, because that person would have had a reasonable expectation of successfully obtaining an image forming apparatus that provides images with stable image density without the occurrence of any image flaws, such as scratches, white voids, and black dots, or the development of interference fringes.

The recitation "being exposed to coherent light" in the instant claims is a statement of intended use, which does not distinguish the photoreceptor rendered obvious over the combined teachings of Mutou and JP'556. The recitation of the intended use must result in a structural difference between the claimed invention and the prior art or in a process, a manipulative difference, in order to patentably distinguish the claimed invention from the prior art. See In re Casey, 152 USPQ 235 (CCPA 1967) and In re Otto, 136 USPQ 458, 459 (CCPA 1963). As discussed above, the photoreceptor rendered obvious over the combined teachings of the cited prior art appears to meet the compositional limitations recited in the instant claim. Thus, the intended use recited in the instant claim does not result in a difference between the photoreceptor recited in the instant claim and the photoreceptor rendered obvious over the combined teachings in the cited prior art.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry of papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLD

Aug. 18, 2004

Janis L. Dote
JANIS L. DOTE
PRIMARY EXAMINER
GROUP 1650
1700